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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,591	07/11/2003	John W. Orcutt	TI-36003	3711
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/617,591	Applicant(s) ORCUTT ET AL.	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the abstract does not have at least 50 words in length. Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claim 20 is objected to because of the following informalities:
 - "said drive source is a magnetic drive source" should read --said mirror drive is a magnetic drive source--. It is believed that there is a typographical error wherein the magnetic drive source is the one that drives the scanning mirror instead of driving the photosensitive medium, the latter being not supported by the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1, 3-4, 9-10, 12-15, 17, 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Bush et al. (U.S. 6,870,560).

Bush et al. discloses a bi-directional galvanometric scanning and imaging device comprising a laser light beam (light beam 80 emitted by the laser light source 78) for creating a spot area on a photosensitive medium, a moving photosensitive medium (rotating photosensitive drum 96) sensitive to said light beam, a scanning mirror (torsion oscillator 50) for interrupting said light beam and redirecting said light beam toward said moving photosensitive medium (Fig. 9), a mirror drive for oscillating said scanning

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mirror to sweep said light beam back and forth across said moving photosensitive medium (e.g., an alternating electrical drive signal is applied to the coils 58 to produce an alternating electromagnetic field that interacts with the magnetic field of the magnets 66 to oscillate the plate or mirror 52 to deflect the incident light beam 80 in a sweeping back and forth movement across the surface of the photosensitive drum 96, as indicated by the arrow 76) (col. 6, lines 25-29) (col. 20, lines 45-51), circuitry for generating digital signals for modulating said light beam as said light beam sweeps across said photosensitive medium to control addressable pixels comprising image lines representing a selected image (control logic sends drive information signals to modulate the laser 104 (col. 11, lines 53-55), said digital signals being generated at a selected rate (col. 12, lines 10-14), circuitry for receiving said generated digital signals and for modulating said sweeping light beam in both directions (col. 12, lines 35-67), and a drive source (drive train 98) for continuously moving said photosensitive medium substantially orthogonal to said sweeping light beam to produce image lines at a said selected rate (Figs. 9-10).

Bush et al. further teaches:

- said moving photosensitive medium is a rotating drum (96),
- said scanning mirror (50) is supported by a pair of torsional hinges (extensions 54a and 54b),
- said pair of torsional hinges are formed from a single crystal silicon (the mirror/plate 52 and the extensions 54a, 54b are cut from a single silicon wafer) (col. 5, lines 57-64),

- said scanning mirror oscillates at the mirrors resonant frequency (col. 6, lines 48-50),
- said *mirror* drive [source] is a magnetic drive source (col. 6, lines 25-29),
- said rate of generating said digital signals is selected to control at least 600 addressable pixels per inch (col. 12, lines 35-67).

The method claims 1, 3-4 and 9-10 are deemed to be clearly anticipated by functions of the above structures.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bush et al.

Bush et al. discloses all the basic limitations of the claimed invention including the resonant frequency of the torsion oscillator being at 2.6 KHz, but except for the resonant frequency of the torsion oscillator being about 3000 to 4000 Hz. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the torsion oscillator with a resonant frequency set between 3000 to 4000 Hz as claimed, since it has been held that where the general conditions of a claim are

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disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

8. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bush et al. in view of Applicants' Acknowledged Prior Art (referred hereinafter as AAPA).

Bush et al. discloses all the basic limitations of the claimed invention including the selected vertical addressable pixel rate set at 600 dpi, but except for the higher pixel rate of 1200 and 2400 dpi.

However, AAPA recognizes that higher pixels per inch such as 1200 and 2400 dpi have now become the industry standard (Specification, paragraph [0041]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to set a higher resolution in the device of Bush et al. since AAPA teaches this to well known in the art that such high resolution printing has become the industry standard, such configuration would therefore require only routine skill in the art.

9. Claims 2, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bush et al. in view of Ogura (U.S. 6,654,160).

Bush et al. discloses all the basic limitations of the claimed invention including the light beam scanning the photosensitive drum in a back and forth motion while the photosensitive drum is rotating but does not explicitly show the balanced zigzag pattern formed on the surface of the photosensitive drum.

Ogura discloses a laser scanning system using a galvanometer mirror (8) for scanning the laser beam on the scanning plane 12 back and forth such that a zigzag pattern is normally formed as shown in Fig. 3.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to produce a zigzag scanning pattern in the device of Bush et al. since Ogura teaches this to be known that a zigzag scanning pattern would result due to the bi-directional scanning motion of the laser beam on a moving scanning surface.

10. Claims 7-8, 22-26 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bush et al. in view of Shimano (U.S. 4,912,568).

Bush et al. discloses all the basic limitations of the claimed invention including the image line occurring within left and right limits on the photosensitive medium (e.g., as determined by the outer beam boundaries 100a and 100b in Fig. 10) but except for the speed for moving said photosensitive medium orthogonal to said beam sweep and the spot size of said laser beam being selected such that laser spots of adjacent image lines located between said left and right limits overlap, and selecting said light beam to have a spot area of at least three times said addressable pixel area such that adjacent "ON" pixels create overlapping beam spots on said moving photosensitive medium.

Shimano discloses an image recording apparatus comprising a galvanomirror (15) for scanning the laser beam L across the photosensitive material (17), which moves in the direction perpendicular to the main scanning direction, wherein the

scanning speed v of the laser beam and the feed speed of the photosensitive material as well as the light beam spot diameter d are selected such that the neighboring scanning lines are overlapped (Fig. 9a) (col. 6, line 56 to col. 8, line 36). Shimano further teaches the light spot diameter d being twice the main and sub-scanning pitch (Fig. 9a).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to adjust the feed speed of the photosensitive medium and the laser beam size in the device of Bush et al. as taught by Shimano. The motivation for doing so would have been to produce an image having a high density pattern.

Moreover, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the light beam spot of at least three times the addressable pixel pitch, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regard to claim 29, Bush et al. discloses the resonant frequency of the torsion oscillator being at 2.6 KHz, and fails to disclose the resonant frequency of the torsion oscillator being about 3000 to 4000 Hz. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the torsion oscillator with a resonant frequency set between 3000 to 4000 Hz as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art,

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discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

11. Claims 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bush et al. in view of Saito et al. (U.S. JP 54-125245).

Bush et al. discloses all the basic limitations of the claimed invention except for the scanning mirror being a multi-layered mirror.

Saito et al. discloses a photo scanner comprising a galvanomirror (14) having dielectric multi-layered films formed on the back surface of the mirror and having the reflectance varies according to the incident angles of the light beam to enable the correction of the fluctuation of the light spot scanning speed.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a multi-layered galvanomirror in the device of Bush et al. as taught by Saito et al. The motivation for doing so would have been to enable the correction of the fluctuation of the light spot scanning speed as suggested by Saito et al.

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bush et al. in view of Shimano, as applied to claims 24-26 above, and further in view of Saito et al.

Bush et al., as modified by Shimano, discloses all the basic limitations of the claimed invention except for the scanning mirror being a multi-layered mirror.

Saito et al. discloses a photo scanner comprising a galvanomirror (14) having dielectric multi-layered films formed on the back surface of the mirror and having the reflectance varies according to the incident angles of the light beam to enable the correction of the fluctuation of the light spot scanning speed.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a multi-layered galvanomirror in the device of Bush et al. as taught by Saito et al. The motivation for doing so would have been to enable the correction of the fluctuation of the light spot scanning speed as suggested by Saito et al.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

September 20, 2005